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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 01013.0327.00PCOO		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP 03/14159		International filing date (day/month/year) 12.12.2003	Priority date (day/month/year) 13.12.2002	
International Patent Classification (IPC) or national classification and IPC B61F5/30				
Applicant BOMBARDIER TRANSPORTATION GMBH et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 20px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 12.07.2004		Date of completion of this report 31.03.2005		
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Lorandi, L Telephone No. +49 89 2399-2872		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP 03/14159

Box No. 1 Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-8 as originally filed

Claims, Numbers

1-16 received on 09.03.2005 with letter of 09.03.2005

Drawings, Sheets

1/2, 2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP 03/14159

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	1-16
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

TO POINT V

I CLAIM 1 AND CLAIMS 2-13 DEPENDING THEREON

1. **PRIOR ART** : The wheel set guidance assembly described in document **EP-A1-0 073 119** appears to be the available prior art coming closer to the subject-matter of Claim 1. Said document will be referred to as the **D1** in the remainder of the procedure.

2. **ARTICLE 33 PCT**: **D1** discloses in the figures a wheel set guidance assembly of suspending a wheel set bearing (description p.5, l.26-28) to a bogie frame (4), comprising individual vertical-, lateral and longitudinal (resp. 8, 10, 10) guidance elements for independent guidance of the wheel set in vertical, lateral and longitudinal directions wherein the stiffness of each guidance element can be selected independently of the other guidance elements.

Therefore, the subject-matter of Claim 1 differs from said prior art in that the longitudinal guidance element is longitudinally arranged wheel set linkage bar for connecting the bogie frame and the wheel set bearing flexibly to allow guidance of a turning movement of the wheels set on curved tracks.

Therefore, Claim is novel over **D1**, and meets the criteria of Article 33(2)PCT.

Considering that the bar (58) disclosed by **US-A-5,001,989** has no resilient elements in its connections and the hydraulic means (74) disclosed by the same document is a dampening means, not a flexible one, it appears that the combination of the aforesaid document with **D1** would not lead to the subject-matter of Claim 1. The latter, thus meets the criteria of inventive step in accordance with Article 33 PCT.

The subject-matter of Claim 1 is industrially applicable as well,

3. **DEPENDENT CLAIMS**: Being dependent on Claim 1, claims 2 to 13 also meets the criteria of Article 33 PCT.

II CLAIMS 14-16

The bogie according to Claims 14 and 15 meet the criteria of Article 33 PCT, as it contains all the features of claims 1-13. The method according to Claim 16 meets the criteria of Article 33 PCT as it makes use of a set guidance assembly according to said claims 1-13.

TO POINT VII

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document **EP-A1-0 073119** is not mentioned in the description, nor is this document identified therein.

Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (aforesaid document **EP-A1-0 073 119**) being placed in the pre-ambble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

In the present case, the features mentioned in par. 2. I, **POINT V** of this report are known in combination from the aforesaid document and belong in the preamble of such a claim.

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CLAIMS

1. Wheel set guidance assembly for suspending a wheel set bearing (10) of a wheel
5 set (20) to a bogie frame (30), comprising individual vertical-, lateral and longitudinal
guidance elements for independent guidance of the movement of the wheel set in
vertical, lateral and longitudinal directions wherein the stiffness of each guidance
element can be selected independently of the other guidance elements, wherein the
longitudinal guidance element is a longitudinally arranged wheel set linkage bar (40) for
10 connecting the bogie frame (30) and the wheel set bearing (10) flexibly to allow
guidance of a turning movement of the wheel set on curved tracks.
2. Wheel set guidance assembly according to claim 1, wherein the longitudinal
linkage bar (40) has a length extending towards a centre bogie console (100) in the
15 longitudinal centre position of the bogie frame (30).
3. Wheel set guidance assembly according to claim 2, wherein the wheel set
linkage bar (40) is connected to the longitudinal inward position of the wheel set
bearing (10) with a flexible coupling.
20
4. Wheel set guidance assembly according to claims 2 or 3, wherein the wheel set
linkage bar (40) is flexibly connected at about the height of the wheel set axle extending
essentially horizontally to flexibly connect to the centre bogie console (100).
- 25 5. Wheel set guidance assembly according to claims 1 - 4, wherein the lateral
guidance element is a spring element (60) of anisotropic stiffness engaging a guidance
pin (70).
6. Wheel set guidance assembly according to claim 5, wherein the stiffness of the
30 spring element (60) in the lateral direction is higher than the stiffness in the longitudinal
and vertical direction.

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7. Wheel set guidance assembly according to claim 6, wherein the spring element (60) comprises rubber-metal elements arranged in lateral direction only.
- 5 8. Wheel set guidance assembly according to claims 5 - 7, wherein the guidance pin (70) is rigidly mounted in the bogie frame (30) protruding in the spring element (60) rigidly mounted on the wheel set bearing (10).
9. Wheel set guidance assembly according to claims 5 - 7, wherein the guidance
10 pin (70) is rigidly mounted on the wheel set bearing (10) protruding in the spring element (60) rigidly mounted in the bogie frame (30)
10. Wheel set guidance assembly according to claims 1 - 9, wherein the vertical
15 guidance element is at least one vertically arranged coil spring (50) connecting the wheel set bearing (10) and the bogie frame (30).
11. Wheel set guidance assembly according to claim 10, having two coil springs
(50) on each side in longitudinal direction of the wheel set bearing and arranged next to the axle position
20
12. Wheel set guidance assembly according to claim 10 or 11, wherein one or both coil springs (50) are combined with a lateral guidance element comprising a spring element (60) of anisotropic stiffness positioned below, in or above the coil spring and engaging a guidance pin (70) positioned inside the coil spring.
25
13. Wheel set guidance assembly according to claim 1, wherein
- the longitudinal guidance element is a longitudinally arranged wheel set linkage bar (40) for connecting the bogie frame (30) and the wheel set bearing (10) flexibly to allow guidance of a turning movement of the wheel set on curved tracks, wherein

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the longitudinal linkage bar (40) has a length extending towards a centre bogie console (100) in the longitudinal centre position of the bogie frame (30), wherein

- the vertical guidance element is at least one vertically arranged coil spring (50) connecting the wheel set bearing (10) and the bogie frame (30) and wherein the lateral guidance element is a spring element (60) of anisotropic stiffness engaging a guidance pin (70).

14. A bogie comprising a wheel set guidance assembly as defined in any one of claims 1 - 13.

15. The bogie according to claim 14 comprising two wheel sets both provided with a wheel set guidance assembly according to any one of claims 1 - 13.

16. A method for providing a bogie with optimal wheel set guidance comprising the steps of:

- providing a bogie comprising a wheel set guidance assembly comprising individual vertical-, lateral and longitudinal guidance elements and
- selecting the stiffness of each guidance element in vertical, lateral and longitudinal directions independently of the stiffness of the other guidance elements to optimise the wheel set guidance in view of the requirements of a particular application of the bogie, wherein the wheel set guidance assembly is the wheel set guidance assembly according to claims 1 - 13.

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